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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/749,204

12/30/2003

Dae-Hun Cho

11038-170-999

1851

24341

7590

06/05/2006

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EXAMINER

PRICE, CRAIG JAMES

ART UNIT

PAPER NUMBER

3753

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/749,204

Applicant(s)

CHO, DAE-HUN

Examiner

Craig Price

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 March 2006 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Makino (US 4,282,896).

Regarding Claims 1 and 2, Makino discloses a check valve (V1), which comprises a pipe (17) formed with an oil inlet (10) and oil outlet (17a), a piston (3,15) (defined as being a solid cylinder (15) or disk that fits snugly into a larger cylinder and

moves under fluid pressure) slidably installed in the pipe, wherein a surface of the piston (3a) selectively contacts an opening (17a) of the oil outlet such that an area of the opening varies according to a position of the piston, a spring (21) pressuring the piston toward the oil inlet for closing an oil passage connecting the oil inlet and oil outlet (col. 3, 11. 23-54), wherein the spring (21) is an asymmetric compression spring as seen in Figure 4, wherein the asymmetric compression spring is a spring getting smaller in diameter toward one direction as seen in Figure 4. With respect to the claimed limitation "wherein the asymmetric compression spring is designed to render the compression length change of the spring to be relatively large when low oil pressure is applied and slight when high oil pressure is applied", since, Makino discloses an asymmetric compression spring as per applicant's claimed invention recited in claim 2. Furthermore, the spring (21), is by definition asymmetric in that the turn of the coil of one side of the spring is not at the same location as the turn of the coil is from the opposite side, thereby being asymmetric or non-symmetric. Therefore, Makino's spring is capable of having a relatively large compression length change when low oil pressure is applied and slight when high oil pressure is applied in as much as the applicant's claimed invention. With regard to the preamble directed to a check valve for use in a diesel engine, a preamble to a claim is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause. See Kropa F. Robie, *supra* at 480. See also Ex parte Mott, 190

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USPQ 31 1, 313 (PTO Bd. of App. 1975). Clearly, the pending claim 1 does not rely on the preamble for completeness.

Regarding claim 4, Makino depicts the claimed limitation, "wherein the diameter of the spring decreases toward one end", in Figure 4, the spring (21) has an outside diameter where the spring decreases toward an end.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makino (4,282,896) in view of Vose (41,950).

Makino has taught all the features of the claimed invention except that the asymmetric compression spring is a spring getting smaller in wire thickness toward one

direction. Vose shows a spring (A) in Figure 6, where the spring is getting smaller in wire thickness toward one direction (col. 2, Lns.19-41 and as seen in Figure 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Makino's spring to have the spring with the spring getting smaller in wire thickness toward one direction as taught by Vose in (col. 2, Lns. 34-41), in order to allow the upper coils to be more elastic than the lower and heavier portion of the spring.

5. Claims 1,2 and 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba (5,150,734) in view of Makino (4,282,896).

Regarding claims 1,2, and 4 Chiba discloses a valve apparatus comprising, a pipe formed with an "oil inlet" (3, is configured to have oil run through the opening) and an "oil outlet" (4, is configured to have oil run through the opening), a piston (8) slidably installed in the pipe, wherein a surface of the piston (3a) selectively contacts an opening (17a) of the oil outlet such that an area of the opening varies according to a position of the piston as shown in figure 6, a spring (9) pressuring the piston toward the oil inlet for closing an oil passage connecting the oil inlet.

Chiba has disclosed all of the features of the claimed invention except that the spring is an asymmetric compression spring designed to render the compression length change of the spring to be relatively large when oil pressure is applied and slight when oil pressure is applied, and wherein the compression spring is a spring getting smaller in diameter toward one direction.

Makino discloses a piston using a tapered spring 21 as shown in figure 4, in which the diameter is getting smaller toward one direction.

In view of the Makino patent, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the tapered spring of Makino into the valve of Chiba to have that a spring is an asymmetric compression spring designed to render the compression length change of the spring to be relatively large when oil pressure is applied and slight when oil pressure is applied, and wherein the compression spring is a spring getting smaller in diameter toward one direction in order to save space within the chamber and reducing the overall length of the valve assembly, as the coils of the spring come together the fully compressed height is reduced due to the taper of the coils.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba (5,150,734) in view of Vose (41,950).

Chiba has taught all the features of the claimed invention except that the asymmetric compression spring is a spring getting smaller in wire thickness toward one direction. Vose shows a spring (A) in Figure 6, where the spring is getting smaller in wire thickness toward one direction (col. 2, Lns.19-41 and as seen in Figure 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chiba's spring to have the spring with the spring getting smaller in wire thickness toward one direction as taught by Vose in (col. 2, Lns. 34-41), in order to allow the upper coils to be more elastic than the lower and heavier portion of the spring.

Response to Arguments

7. Applicant's arguments filed on March 23, 2006 have been fully considered but they are not persuasive.

In regards to your argument,

the piston of Makino has a surface (3a), which contacts the opening (17a), when the piston is opened the area of 17a changes as the pressure of the oil pushes towards the tapered spring,

also in the newly added rejection, Chiba performs in a similar manner when combined with Makino or Vose.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roessler (1,841,337) discloses a similar fluid-handling device.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Price whose telephone number is (571) 272-2712. The examiner can normally be reached on 7AM - 5:30PM M-R.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4939. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CP



17 May 2006



ERIC KEASEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700